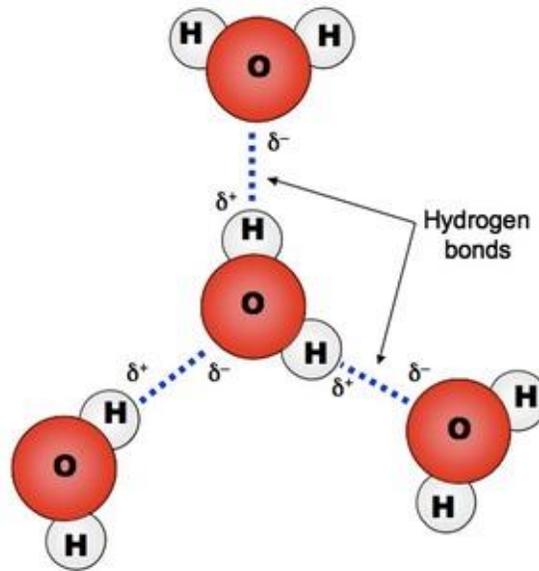
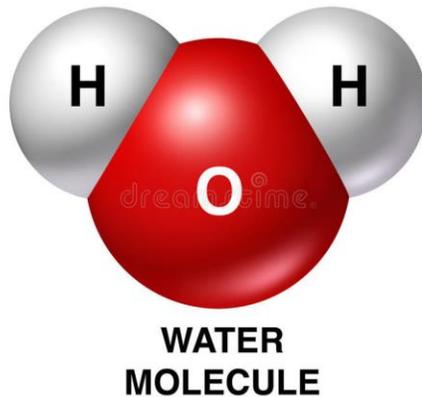


Oceanography Notes

Name: _____ Period: _____

Properties of Ocean Water



- Water is a _____ molecule (with a positive and negative end) that forms temporary weak _____ bonds with other water molecules.
 - Its polarity is due to the _____ sharing of electrons between the oxygen and hydrogen atoms.
- More substances _____ in water than any other common liquid.
- Water has a high _____ - the ability to absorb a great amount of _____ energy without raising its temperature much.
- Water commonly exists in all 3 _____ of matter – solid, liquid, and gas.

Why does ice float in water when normally solids sink in their liquid counterparts?

What would happen if ice didn't float?

What's actually happening?

- Unlike most substances, the _____ of water _____ when it _____. This is why ice floats on water.

- Salt water has a lower freezing point and higher _____ than fresh water.
- Salt water has a more _____ pH than fresh water. Balance of this pH is important to the health of marine ecosystems.

- It controls the rate at which the ocean will absorb and buffer changes in atmospheric _____.
- Hydrogen bonding between water molecules gives it a high _____.

Why is the ocean blue?

What's actually happening?

- Water _____ and _____, but _____ back _____. As a result, water appears blue.

The Global Ocean

- _____% of Earth's surface is covered by water (mainly in the Southern Hemisphere)
- The global ocean is divided into _____ major oceans:



1. The _____ Ocean

- Largest of Earth's oceans.
- Its lowest known point is the _____ Trench (35,797 ft) below sea level.
- It is currently shrinking due to plate tectonics (while the Atlantic Ocean is increasing in size) by roughly an _____ per year.

2. The _____ Ocean

- Second-largest Ocean.
- Mid-Atlantic _____
- Occupies an elongated, _____-shaped basin extending longitudinally between the Americas and Europe/Africa.

3. The _____ Ocean

- The third-largest of the world's oceans, covering approximately _____% of the water on the Earth's surface.
- Several island nations are in the Indian Ocean. Name two:

4. The _____ Ocean

- Officially recognized as an Ocean in the year _____.
- Also known as the Great Southern Ocean, the Antarctic Ocean, and the South Polar Ocean.
- It comprises waters south of _____°S latitude and encircles Antarctica.
- Large icebergs are very common in its waters, as well as _____.

Sea ice is simply frozen _____ water. It forms, grows and melts in the ocean. In contrast, icebergs, glaciers, ice sheets, and ice shelves all originate on _____ and from _____ water.

Sea ice influences our global climate. Its bright surface reflects sunlight back into space, affecting global _____. It also affects the movement of ocean waters. Saltier water (that isn't frozen into the ice) sinks and contributes to global ocean circulation.

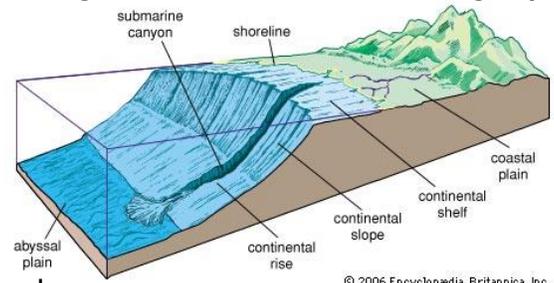
Misconception: Melting sea ice will cause sea level to rise.

Truth: Sea ice is already _____ (and not located on a land mass), so its melting will not cause the sea level to rise. Sea levels rise and fall mainly due to changes in plate _____; however, recent climate change has added in another factor – the melting of Earth's continental ice _____.

5. The _____ Ocean

- Smallest and _____ of the world's 5 major oceans.
 - Partially covered by sea ice throughout the year and almost completely in the _____ months (Oct to June)
- All other bodies of ocean water are _____ portions of these 5 oceans.
 - The ocean has been studied for various reasons:
 - Curiosity
 - Transportation – migration, trade, _____ power
 - Food – fishing
 - Non-food resources – energy, _____, salt
 - Understanding _____ change – ocean temperature and currents are directly related to changes in weather and climate.
 - Understanding its contribution to the _____ cycle
 - Recreation
 - Exploration of the ocean has revealed the shape and makeup of the ocean _____.

- The deep ocean has recently been explored using different types of technology.
 - _____ – underwater research vessels carrying instruments and equipment for deep ocean research
 - _____ – sound waves are sent from a transmitter, reflect off the ocean floor and are picked up by a receiver
- Most of our seafloor knowledge comes from continental _____, or the area of the ocean within 200 miles of the land.
 - This area includes features such as:
 - Continental shelves (larger at passive margins and short at active margins)
 - Continental _____
 - Continental rises
 - Ocean _____
 - Beyond this area is the vast abyssal plain
- Other features of the deep ocean floor include:
 - _____ formed by underwater volcanoes
 - Mid-ocean _____ where sea-floor spreading occurs
- The contents of the ocean floor can be discovered by collecting _____ samples.
- Sediment is deposited on the ocean floor and includes:
 - Rock particles carried by _____ to the ocean
 - _____ sediment (ooze) or the remains of marine plants and animals
 - Chemical sediments that form lumps of mineral called _____



Movements of the Ocean

- Ocean water on the surface is set into motion by steady currents. The _____ layer of water moves the _____ and _____ down with increasing depth.
- The surface currents are affected by the direction of prevailing _____, Coriolis Effect, and locations of continents.
 - **Coriolis Effect** – wind and water are _____ to the right in the N. Hemisphere and to the left in the S. Hemisphere.
 - Results in wind belts and huge circles of water called _____.
 - Sargasso Sea - seaweed and _____ collect in water gyres (just like high pressure air wants to move to the eye of a storm where there is low pressure air)
 - Great Pacific Garbage Patch
 - In the ocean, pollution can affect the entire food _____.
 - Tiny creatures such as _____ take in pollutants, which are passed on to the larger animals that feed on them.

- The effects of pollution are most visible in the top _____ in a food web, as they end up with the highest level of pollutants from their prey.
 - The _____ Stream is a swift, warm current that is part of a gyre.
 - When polar water cools, it _____ and sinks below warm water.
 - Water off the coast of Antarctica is the _____ of all ocean water – because it is cold and has a high salinity. It sinks and creates a slow, _____ current along the ocean bottom.
- Ocean Waves
 - Waves are caused by _____ passing through the water. Particles are moved in a _____ motion and end in the same place they start with each passing wave.
- Tides
 - The daily rise and fall of the ocean waters is caused by _____
 - Stronger pull on the side of the Earth near the _____ = Direct High Tide
 - The side away from the _____ = Indirect High Tide
 - The areas between the high tides = Low Tide